

Progress and questions about sCVD Diamond Detectors for Particle Tracking

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Chemical Vapor Deposition (CVD) diamond has been used extensively in beam conditions monitors as the innermost detectors in the highest radiation areas of BaBar, Belle, CDF and now all LHC experiments. Diamonds are considered as an alternate sensor for use very close to the interaction region of the HL-LHC, where the most extreme radiation conditions will exist.

We present comparative test results of single-crystal chemical vapor deposition diamonds from various sources (industrial manufacturers and research laboratory). The influence of various parameters have been evaluated : Nitrogen contents, surface finishing techniques, temperature, metallization techniques, choice of metal... Long term studies have been carried out.

We will conclude about the readiness of diamond detectors for particle detection and tracking for the future programs at the High-Luminosity LHC.

Primary author: Dr BROM, Jean-Marie (IPHC - Strasbourg (France))

Co-authors: Dr TALLAIRE, Alex (LSPM); Dr GICQUEL, Alix (LSPM); Prof. LACOSTE, Ana (LPSC); Dr VALENTIN, Audrey (LSPM); Prof. MATHIOT, Daniel (ICube); Mr MULLER, Dominique (ICube); Dr HOSTACHY, Jean-Yves (LPSC); Prof. ACHARD, Jocelyn (LSPM); Prof. COLLOT, Johann (LPSC); Mr YAMOUNI, Mafhoud (LPSC); Mr ROQUES, Stephane (ICube); Dr MILLE, Vianney (LSPM)

Presenter: Dr BROM, Jean-Marie (IPHC - Strasbourg (France))

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